Algebra RH

Essential Questions: How can we determine if a sequence is arithmetic or geometric? What do the graphs of arithmetic and geometric sequences look like?

Do Now:

1. Brian is downloading episodes of his favorite TV show to play on his personal media device. The cost to download 1 episode is $1.99. The cost to download 2 episodes is $3.98. The cost to download 3 episodes is $5.97.

   (a) Does this situation represent an arithmetic or a geometric sequence?

   (b) What is the common difference/ratio?

   (c) Write an explicit formula to represent the sequence.

2. A virus reproduces by splitting in two, and after a certain growth period, it splits into two again. As the virus continues to reproduce, it will continue to split in two.

   (a) Is the sequence arithmetic or geometric? Explain your answer.

   (b) Fill in the first three terms of the sequence.

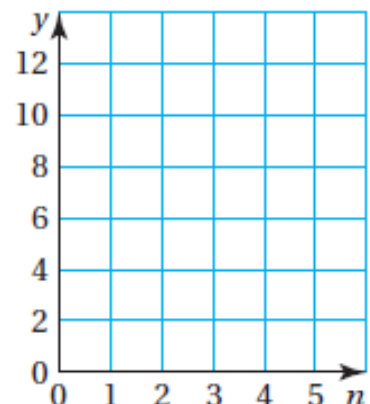   (c) Write an explicit formula for the sequence.

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Graphing Sequences

To graph a sequence, the position numbers of the terms in the sequence are the x-coordinates and the terms are the y-coordinates. Each term corresponds to a point on the graph.

3. (a) Use the figures to complete the table. Then plot the points in your completed table.
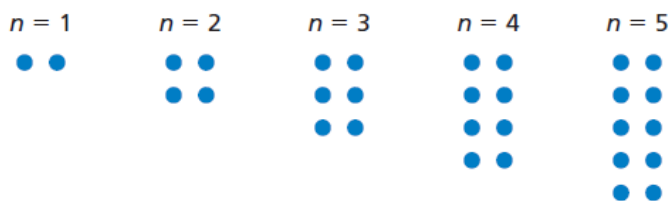
| $n = 1$ | $n = 2$ | $n = 3$ | $n = 4$ | $n = 5$ |

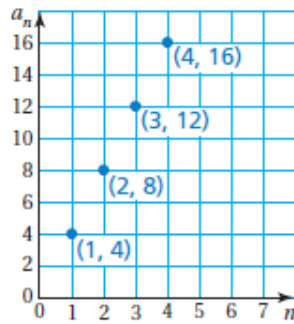| Number of Rows, n	1	2	3	4	5
Number of Dots, y					

(b) Arithmetic or geometric sequence?

(c) Write an explicit formula to describe this scenario.

Graph the **arithmetic** sequence 4, 8, 12, 16, ...	Graph the **geometric** sequence 32, 16, 8, 4, ...

- Make a table. Then plot the ordered pairs.

Position, n	Term, a_n
1	4
2	8
3	12
4	16

Points plotted: (1, 4), (2, 8), (3, 12), (4, 16)

- What do you notice about the graph?

- Make a table. Then plot the ordered pairs.

Position, n	1	2	3	4	5
Term, a_n	32	16	8	4	2

Points plotted: (1, 32), (2, 16), (3, 8), (4, 4), (5, 2)
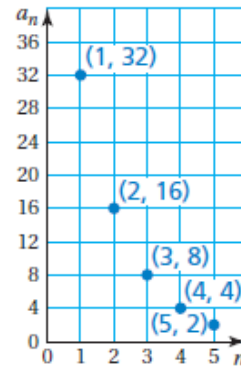
- What do you notice about the graph?

4. Michael is sick with the flu but he still comes to school on Monday. He arrives at 8am and by 9am (Hour 1), Michael has already infected two of his friends, Joe and Lia. By 10am (Hour 2), Joe has infected two of his friends, Bill and Ted, and Lia has infected two of her friends, Jenny and Kiara.
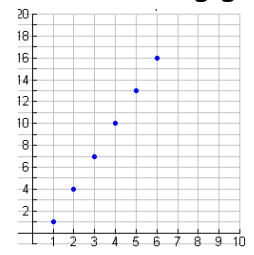
(a) If each person with the flu infects two other people in each hour, how many students are infected by 3pm (Hour 7)? Complete the table and graph the points on the grid below.

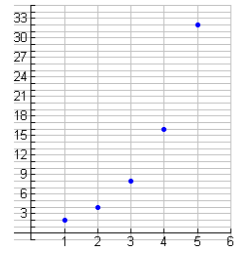| Hour	n	0	1	2	3	4	5	6	7
# of students infected each hour	$f(n)$	1	2	4					

(b) Does this situation represent an arithmetic or geometric sequence?

(c) Write an explicit formula to represent the sequence.

The following graphs are associated with

20 18 16 14 12 10 8 6 4 2 1 2 3 4 5 6 7 8 9 10	**33** 30 27 24 21 18 15 12 9 6 3 1 2 3 4 5 6

_____ sequences   _____ sequences